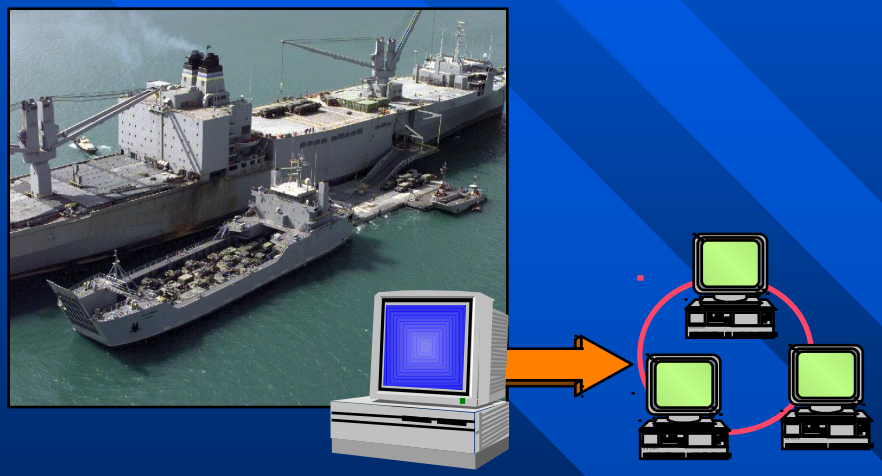
JLOTS CBT & Simulation Tool



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JLOTS Training Pipeline

Planned Course Modules

- Nine 50 minute lessons with interactive tests under current contract
  - Overview of JLOTS Planning/Organization & Command
  - Facility Installation
  - Ocean Transport
  - Ship Discharge
  - Lighterage Operations
  - Shoreside Operations
  - Beach and Port Clearance and Marshalling Ops
  - Cargo Control
  - Liquid Cargo Offshore Operations
- Force Protection module

Tec-Masters Contract

- CBT will run on contractor server
  - Provides for automated tracking of student progress
  - Provides student feedback reports
  - Students receive a set of CDs with graphics/videos to speed internet connection
- EWTGPAC will manage student throughput and monitoring
- Modules can be taken in any sequence
  - End of module test
  - Final Test
  - Certificate of Completion printed after final exam passed
- CBT Disks will also contain JLOTS simulation, Glossary and References
- CITM used as initial simulation…
  - but CITM covers dry cargo ship to shore operations; the course covers other operations as well.

Grand Unified JLOTS Simulation

Coordination Using Extend and Proof Animation

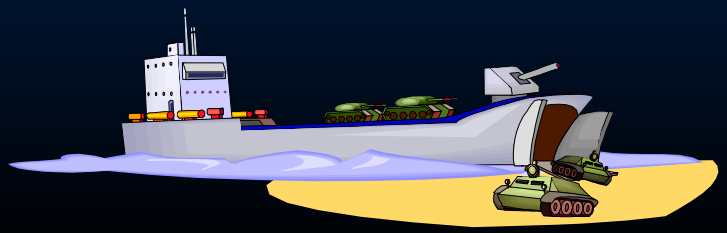
- Extend is a professional user-friendly simulation tool.
- Sophisticated, detailed dynamic models of real processes using drag and drop, point and click methods.
- Is programmable for special requirements using ModL
- Proof Animation is general purpose system animation software which can be linked to Extend for concurrent or post-process animation of models.

Debbie Green

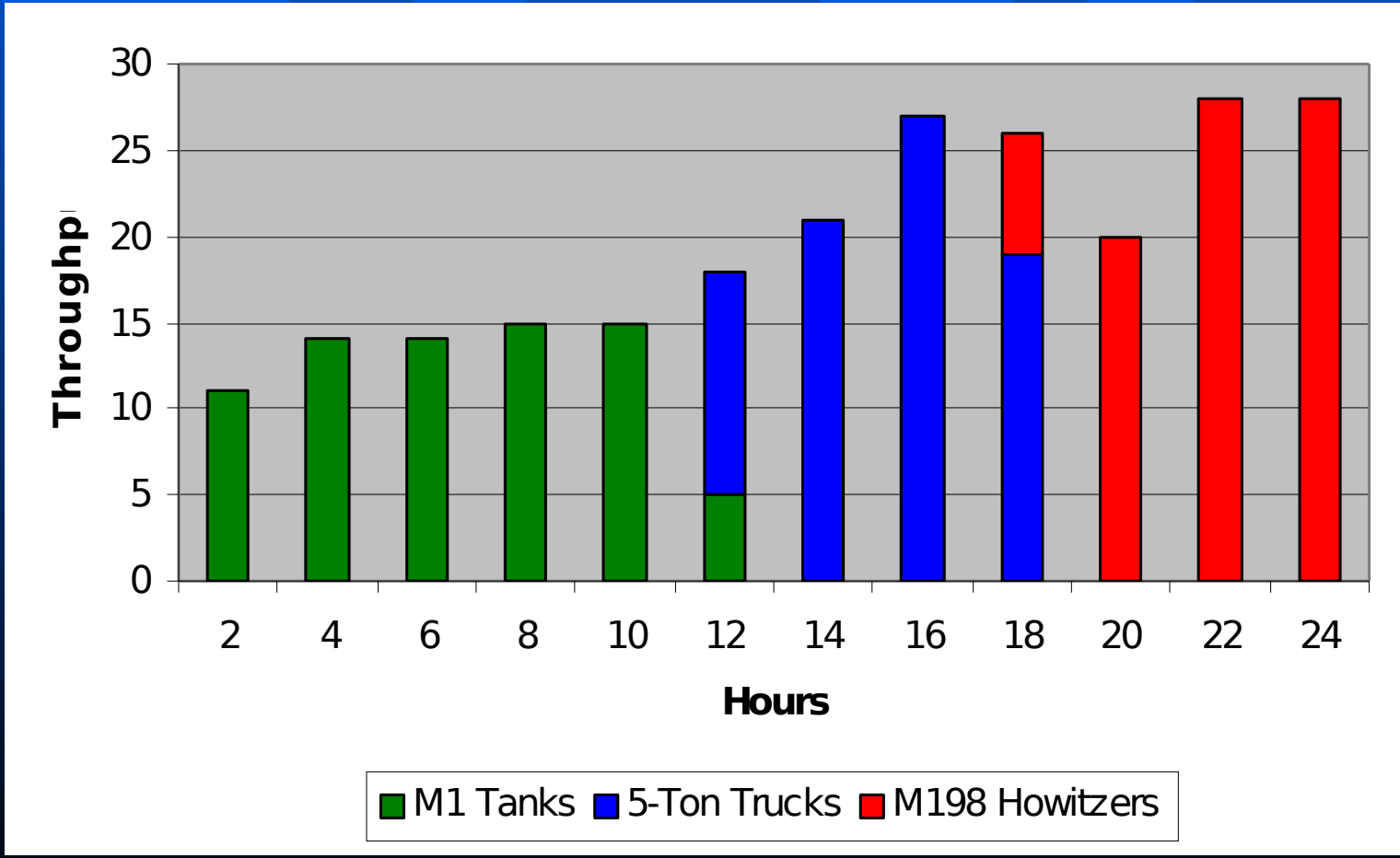
- CITM
- Converting to Extend, problems and advantages
- Status of the Extend version of CITM

What is CITM?

- Fortran code written in a PC environment
- Tracks the life a lighter during JLOTS
- Outputs cumulative/recent throughput
- Accounts for environmental and physical factors that may affect throughput rates
- Time-driven, 1-minute intervals



Example of CITM Output Showing Prioritized Offload



Converting CITM to Extend

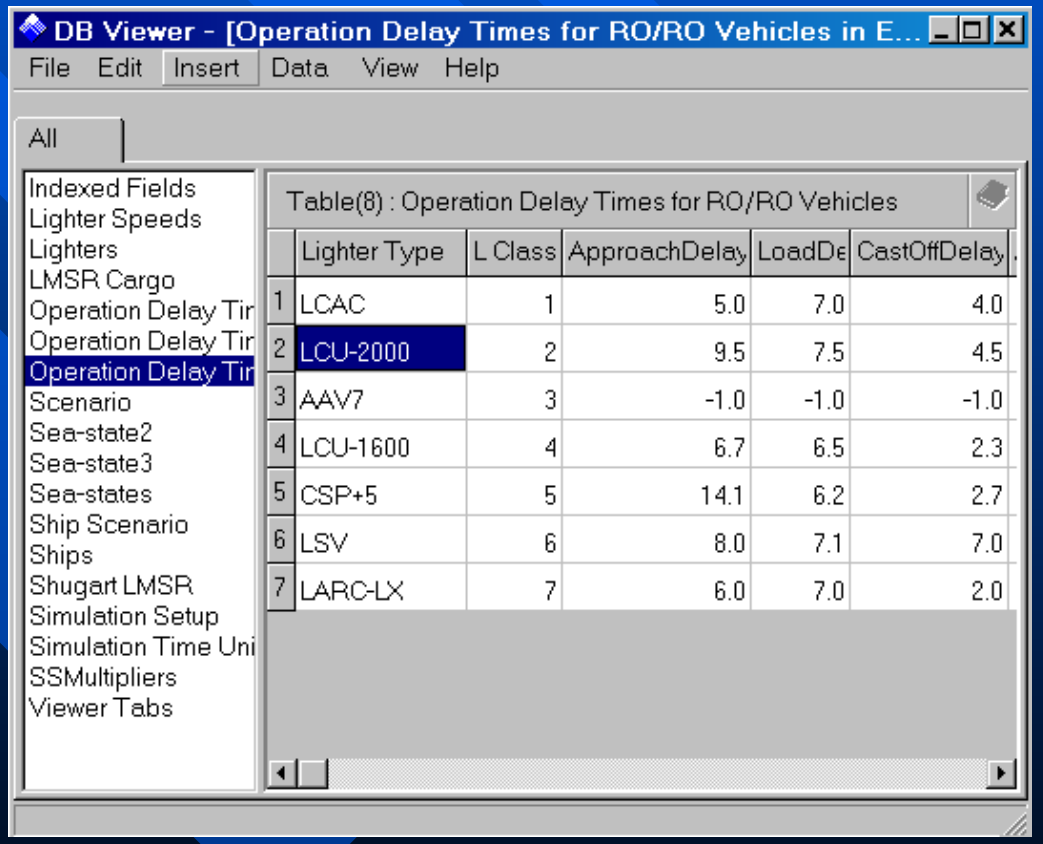
- Obstacles to overcome
  - Learning a new software language
  - CITM was written in Fortran
  - Needed to change from being a time-driven simulation to an event-driven simulation
- Advantages
  - Flowchart
  - Algorithms
  - Data

Converting CITM to Extend

- Forced to take a more object-oriented approach
- Each lighter is identified as an item which carries with it numerous attributes
- Able to use existing algorithms within the Discrete Event Equation block
- Extend's database capabilities made it easy to import existing Ascii and Excel data files
- Extend's modular design allows for multiple programmers to work on code simultaneously

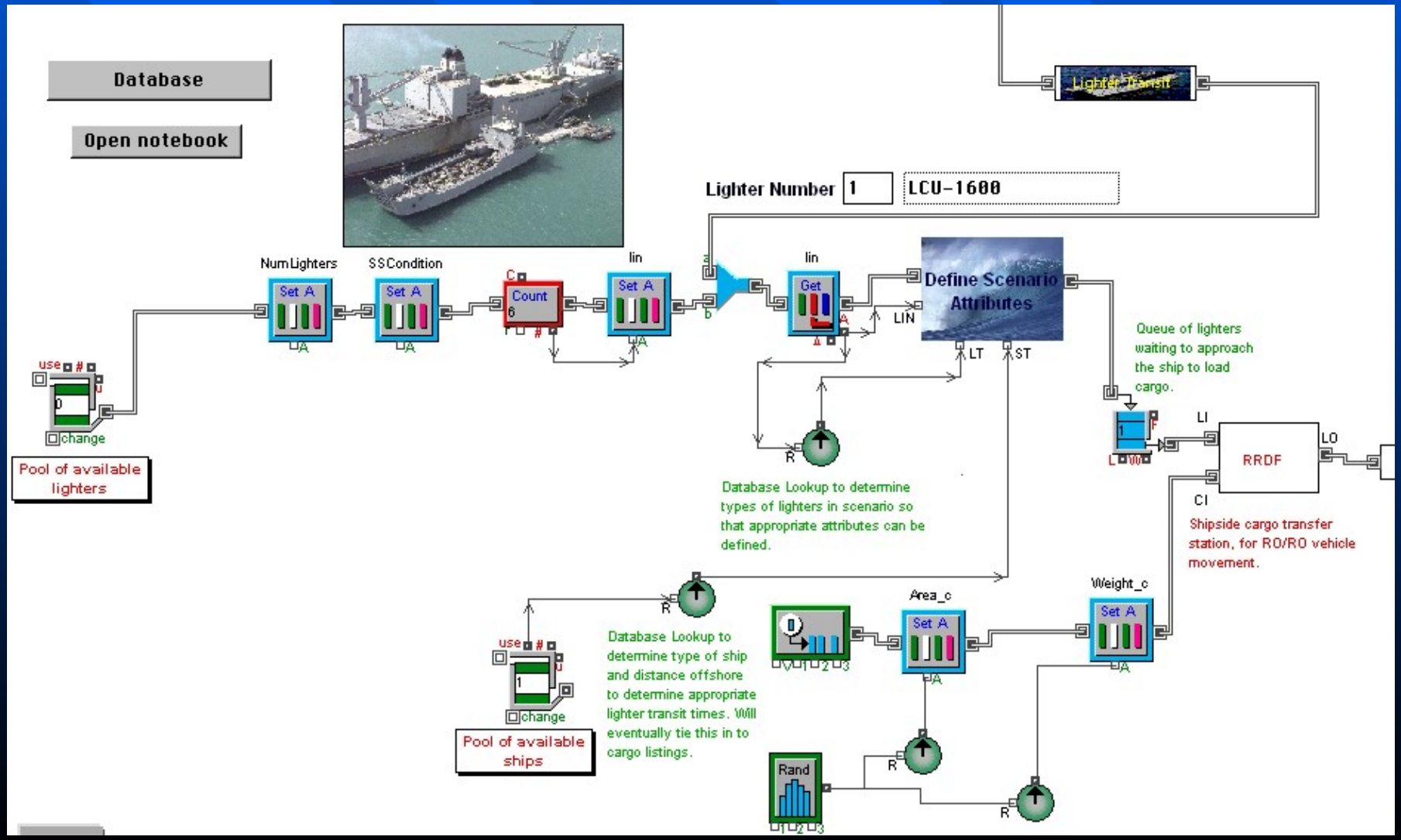
Converting CITM to Extend

- Screenshot of Database Viewer
- Includes:
  - Lighter characteristics
  - Ship characteristics
  - Sea-state data
  - Delay times for lighter operations
  - Ship's cargo



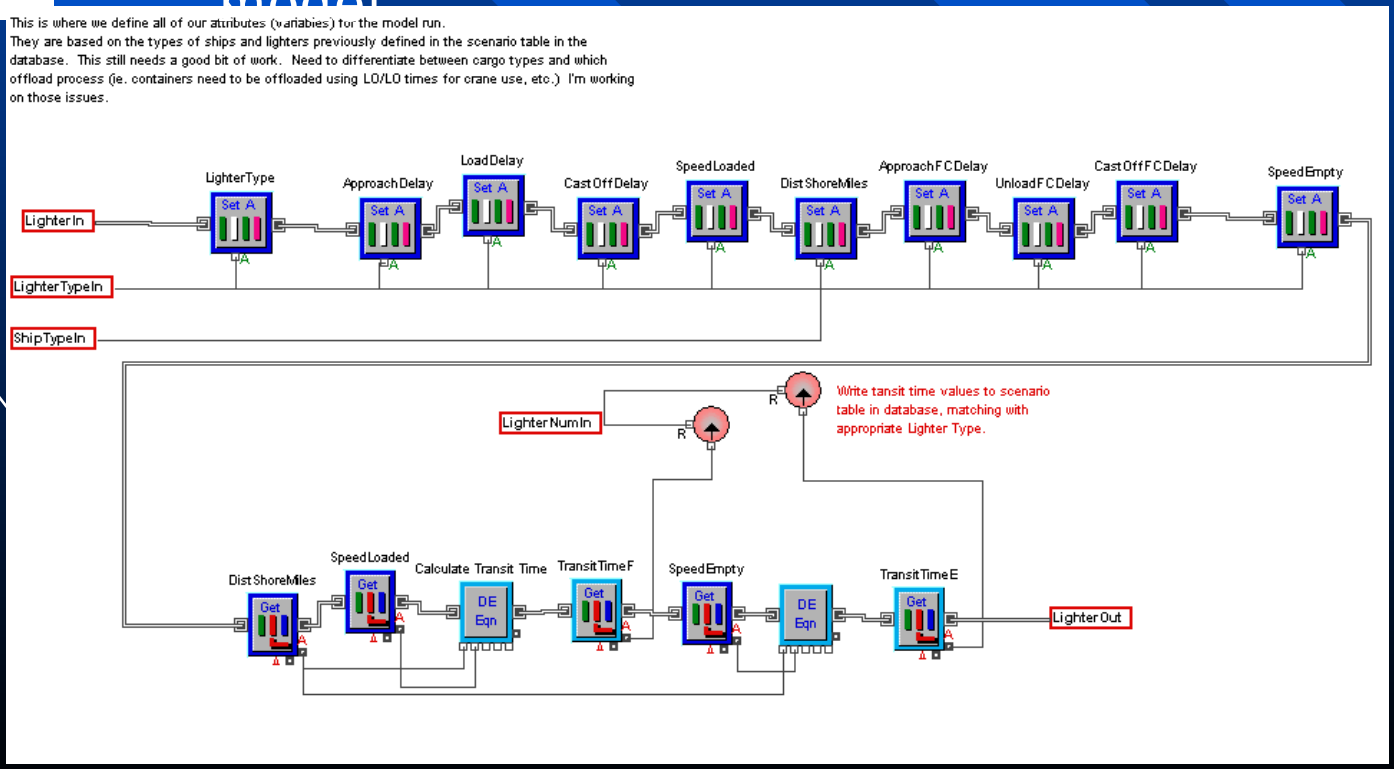
Converting CITM to Extend

Screenshot showing a portion of the model layout



Converting CITM to Extend

Hierarchical Blocks can have many layers and are
useful in managing the complexity of the model


This is where we define all of our attributes (variables) for the model run.
They are based on the types of ships and lighters previously defined in the scenario table in the database. This still needs a good bit of work. Need to differentiate between cargo types and which offload process (ie. containers need to be offloaded using LO/LO times for crane use, etc.) I'm working on those issues.
LighterIn
LighterTypeIn
ShipTypeIn
LighterType
ApproachDelay
LoadDelay
CastOffDelay
SpeedLoaded
DistShoreMiles
ApproachFCDelay
UnloadFCDelay
CastOffFCDelay
SpeedEmpty
Set A
LighterNumIn
Write tansit time values to scenario table in database, matching with appropriate Lighter Type.
DistShoreMiles
SpeedLoaded
Calculate Transit Time
TransitTimeF
SpeedEmpty
TransitTimeE
Get
DE Eqn
LighterOut

Current Status

- Where we are now
  - Completed basic framework of Extend model
  - Imported all data files
  - Sea-state has been incorporated
  - Cargo generator block pulls cargo from ships manifest
- What's next?
  - Addition of bathymetry data
  - Expand blocks to include LO/LO operations
  - Develop notebook style GUI for entering scenario data
  - Generate various output graphs and charts

Gary Hall

- General model to include other JLOTS phases
- Port simulation

General Operational Description

- Equipment and supporting personnel depart from base.
- Equipment and personnel arrive on station.
- Equipment offloaded, installed and checked out.
- Start and continue operations.
- Resupply as needed from external source.

Usage Of Model

- Set up scenario input parameters
  Speeds, distances and locations where resources are available.
  Required throughput specified for a scenario.
- Student plans operations.
  Numbers of ships, aircraft and lighters.
  Departure times, locations.
- Model would simulate operation
  Timeline adequate?
  Throughput achieved?